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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/846,495	04/30/2001	Christopher Hertzler	PA1457US	4676

29989 7590 06/22/2005

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EXAMINER
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TRAN, HIEN THI

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 06/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/846,495	Applicant(s) HERTZLER ET AL	
	Examiner Hien Tran	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 April 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 and 18-24 is/are pending in the application.
- 4a) Of the above claim(s) 1-15 and 22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16, 18-21, 23 and 24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-16 and 18-24 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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*HL*

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities:

It is unclear as to where the heat exchange means and the wetting means are disclosed in the specification and drawings (claims 16, 18).

Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 16, 18-21, 23-24 are rejected under 35 U.S.C. 112, first and second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 16, since the elements in the claims, e.g. "heat exchange means for cooling" in line 7, and "wetting means" in line 8 are written in a "means-plus-function" format, it must be interpreted as corresponding structure described in the specification or the equivalents thereof consistent with 35 U.S.C. 112, sixth paragraph. *In re Donaldson*, 16 F.3d 1189, 1193, 29 USPQ 1845, 1848 (Fed. Cir. 1994) (en banc). However, since the instant specification does not disclose adequate structures corresponding to each of the claimed elements and the equivalents for performing the recited functions, it is impossible to determine the structure of the claimed

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elements and the equivalents thereof, as required by 35 U.S.C. 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967). It is unclear as to what structural limitation applicants are attempting to recite, where the cooling section with heat exchange means and wetting means is disclosed in the specification and drawings. Apparently, the heat exchange means and the wetting means are the same elements (note claims 16 and 18). Furthermore, it is unclear as to where it is disclosed in the specification that the cyclone scrubber includes a cooling section; and a scrubbing section, where the sections are shown in the drawings and what defines these sections.

Also in claim 16, it is unclear as to where it is disclosed in the specification that the wetting means comprises the elements set forth in lines 10-22; in line 19 it is unclear as to where the term "all ... surfaces" is disclosed in the original specification; in line 26 it is unclear as to what is intended by "treated" and how the treated waste gas is related to the waste gas stream set forth in line 4.

In claim 18, it is unclear as to where it is disclosed in the specification that the heat exchange means comprises the outer and inner tubes set forth in line 3.

In claim 19, lines 3-4 it is unclear as to where the newly added limitation is disclosed in the specification.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. The art area applicable to the instant invention is that of an apparatus for removing particulate matter and acid gas.

One of ordinary skill in this art is considered to have at least a B.S. degree, with additional education in the field and at least 5 years practical experience working in the art; is aware of the state of the art as shown by the references of record, to include those cited by applicants and the examiner (*ESSO Research & Engineering V Kahn & Co*, 183 USPQ 582 1974) and who is presumed to know something about the art apart from what references alone teach (*In re Bode*, 193 USPQ 12, (16) CCPA 1977); and who is motivated by economics to depart from the prior art to reduce costs consistent with the desired product characteristics. *In re Clinton* 188 USPQ 365, 367 (CCPA 1976) and *In re Thompson* 192 USPQ 275, 277 (CCPA 1976).

8. Claims 16, 18-21, 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holst et al (5,955,037) in view of Miczek (3,722,185).

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With respect to claim 16-18, Holst et al discloses an apparatus for removing particulate matter and acid gases from a waste gas stream while inhibiting clogging and corrosion of a waste gas treatment system, the apparatus comprising:

a system inlet 1060 for introducing the waste gas stream;

a cooling section coupled to the system inlet 1060; the cooling section including a heat exchange means for cooling the waste gas and a wetting means 1003 for reducing clogging and corrosion; the heat exchange means and the wetting means comprising an outer tube 1012 and an inner tube 1011 defining an annulus 1032 therebetween and water inlet 1048 (see, for example, col. 24, line 48 to col. 29, line 59);

a scrubbing section 1013 coupled to the cooling section for removing particulate matter and acid gases of the waste gas stream; and

an outlet for discharging the scrubbed waste gas.

The apparatus of Holst et al is substantially the same as that of the instant claims, but is silent as to whether the wet scrubber may be a cyclone scrubber with cyclonic water jets.

However, Miczek discloses the conventionality of providing a centrifugal wet scrubber or cyclone scrubber having cyclonic water jets in removing particulate matter.

It would have been an obvious matter of design choice to substitute the scrubber of Miczek for the scrubber of Holst et al, since such a modification would have involved a mere substitution of known equivalent structures. A substitution of known equivalent structures is generally recognized as being within the level of ordinary skill in the art. *In re Fout* 213 USPQ 532 (CCPA 1982); *In re Susi* 169 USPQ 423 (CCPA 1971); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *In re Ruff* 118 USPQ 343 (CCPA 1958).

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With respect to claim 19, Holst et al discloses that the scrubbing section comprises atomizer (see, for example, col. 12, lines 8-25) (note the line 1080 extending through the inlet ports 1048 into the annulus 1032 near the outside surface of the inner tube 1011) and means for expulsion of the mixture from the scrubbing section (see, for example, col. 14, lines 36-42).

It would have been obvious to one having ordinary skill in the art to select an appropriate length for the atomizers on the basis of its suitability for the intended use as a matter of obvious design choice to obtain the desired benefits attendant thereof, and since it has held that when the only difference between the prior art device and the claim was a recitation of relative length, and the device with the relative length would not perform differently than the prior art device, the claimed device was not patentable distinct.

With respect to claims 20-21, the claims only recite method limitations which are of no patentable moment in apparatus claims. In any event, Holst et al discloses that the water may be fresh water or the recycled wastewater (see, for example, col. 17, lines 44-47).

With respect to claims 23-24, Holst et al discloses that the scrubber is coupled to and follows a thermal oxidizer (col. 11, lines 22-29; col. 13, line 42 to col. 14, line 17; col. 25, lines 57-65).

### ***Response to Arguments***

9. Applicant's arguments filed 4/11/05 have been fully considered but they are not persuasive.

Applicants argue that the cyclone scrubber cools the waste gas stream and therefore functions as the heat exchange means for cooling, and creates a vortex of water in the annulus so that all surfaces are wetted and therefore functions as the wetting means. The structures and

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equivalents, e.g. inner tube, outer tube, annulus, injection ports, spray inlets and atomizers are described in the specification and drawings. Such contention is not persuasive as the specification and drawings only describe the parts of the scrubbers, e.g. inner tube, outer tube, annulus, injection ports, spray inlets and atomizers. Applicants have not mentioned which parts and equivalents for the heat exchange means and wetting means, nor which sections are considered cooling section, and scrubbing section.

Applicants argue that the cyclone scrubber functions as heat exchange means and wetting means. If both means are the same, then it is unclear as to why applicants recite two separate elements in the instant claim.

Applicants argue that Holst et al does not teach wetting all the gas contacted surfaces as that of the instant claim since the surfaces associated with the entire upper annular section 1008 are left dry and subjected to clogging with particulate matter. Such contention is not persuasive as it is first noted that the newly added term "all" is nowhere disclosed in the original specification and therefore introduces new matter as set forth above. Second, Holst et al discloses that all of the surfaces associated with the annular section 1032 of the wetting means are wetted by wetting the inside and outside surfaces of the inner tube 1011 and the inside surface of the outer tube 1012 and therefore meets the instant claim. The upper annular section 1008 is not a part of the wetting means.

Applicants argue that in the instant claim, the cooling section and the scrubbing section are parts of the cyclone scrubber wherein the inlet 606 is adjacent to the wet pretreatment tower, external to the scrubber. Such contention is not persuasive as the cooling section 1066 and the scrubbing section are parts of the scrubber 1013 (Fig. 13). Holst et al further discloses that the



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structure set forth in Fig. 13 may be coupled with any treatment equipments such as thermal oxidizer, etc. (col. 30, lines 13-18). The inlet 606 in Fig. 10 is just one location in a plurality of locations where the inlet structure may be coupled.

Applicants argue that Holst et al does not teach the use of atomizers for spraying high pressure water via spray inlets and spray atomizers, through the wall of water cascading down inside surface of the inner tube 212 and the atomizers of Holst et al are used in the pretreatment unit before a heated oxidation chamber. Such contention is not persuasive as the type of material in the nozzles or atomizers is not a part of the apparatus and is of no patentable moment in apparatus claims. In any event, Holst et al does disclose the use of spray atomizers either before or after the oxidation chamber (col. 12, lines 8-25; col. 13, lines 44-47). Holst et al also discloses that the water may be fresh water or waste water (col. 17, lines 44-47). One having ordinary skill in the art would be able to select an appropriate type of nozzles/atomizers for used in the system based on the teachings of Holst et al.

Applicants argue that the heat exchanger of Holst is in a heated oxidation unit, not a cyclone scrubber, therefore one skilled in the art of heat exchanger would not likely look to the Holst et al or the Miczek references in the art of removing particulate matter and acid gases. Such contention is not persuasive as Holst et al and Miczek references are both teaching the use of scrubber in removing particulate matter and acid gases. Since Holst et al discloses all of the structural elements of the wetting means and/or heat exchange means, the heat exchange function is inherent therein.

Applicants argue that claim 18 is a product claim linking a process of using of claim 22. Such contention is not persuasive as the heat exchange means of claim 18 has nothing related to a method of inhibiting clogging and corrosion of claim 22.

***Conclusion***

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien Tran whose telephone number is (571) 272-1454. The examiner can normally be reached on Tuesday-Friday from 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HT  
June 20, 2005

*Hien Tran*  
**Hien Tran**  
**Primary Examiner**  
**Art Unit 1764**